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FO converter with integrated optical diagnostics, alarm contact, for PROFIBUS up to 12 Mbps, T-coupler with two FO interfaces (FSMA), 660 nm, for polymer/PCF fiber cable

## Product description

The **PSI-MOS-PROFIB/FO...** devices convert copper-based PROFIBUS interfaces to fiber optics. The integrated optical diagnostics allow permanent monitoring of the FO paths during installation and also during operation. The floating switch contact is activated when the signal output on the fiber optic paths drops to a critical level. The **PSI-MOS-PROFIB/FO...** T T-couplers allow the interface to be converted for two **FO cables**. They can be used to create linear structures and ring structures for increased system availability.

## Your advantages

- Can be combined with the PSI copper repeater in a modular way using DIN rail connectors
- Supply voltage and data signals routed through the DIN rail connectors
- Connections can be plugged in via a COMBICON screw terminal block
- Automatic data rate detection or fixed data rate setting via DIP switches
- Redundant power supply
- High-quality electrical isolation between all interfaces (PROFIBUS // fiber optic ports // power supply // DIN rail connector)
- Approved for use in zone 2
- Integrated optical diagnostics for continuous monitoring of FO paths
- Intrinsically safe fiber optic interface (Ex op is) for direct connection to devices in zone 1
- Floating switch contact for advance warning of critical FO paths
- Suitable for all data rates up to 12 Mbps
- Bit retiming for any cascading depth
- Shipbuilding approval in accordance with DNV GL



# PSI-MOS-PROFIB/FO 660 T - FO converters



2708287

<https://www.phoenixcontact.com/us/products/2708287>

## Commercial data

Item number	2708287
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN06
Product key	DNC211
GTIN	4017918973988
Weight per piece (including packing)	251.3 g
Weight per piece (excluding packing)	191.38 g
Customs tariff number	85176200
Country of origin	DE

## Technical data

### Notes

#### Note on application

Note on application	Only for industrial use
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#### Utilization restriction

CCCex note	Use in potentially explosive areas is not permitted in China.
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### Product properties

Product type	Media converter
Product family	PSI-MOS
MTTF	213 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
	150 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
	86 Years (SN 29500 standard, temperature 40°C, operating cycle 100%)
MTBF	201 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day))
	42 Years (Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day))

### Electrical properties

Electrical isolation	VCC // RS-485
Maximum power dissipation for nominal condition	2.4 W
Test voltage data interface/power supply	1.5 kV <sub>rms</sub> (50 Hz, 1 min.)

#### Supply

Supply voltage range	18 V DC ... 30 V DC (via pluggable COMBICON screw terminal block)
Nominal supply voltage	24 V DC (in acc. with UL)
Typical current consumption	100 mA (24 V DC)
Max. current consumption	130 mA
	≤ 2 A (For operation in a joining station, via the DIN rail connector)

### Output data

#### Switching

Output name	Relay output
Output description	Alarm output
Number of outputs	1
Maximum switching voltage	60 V DC (Resistive Load, General Load)
	30 V AC (Resistive load)
	42 V AC (peak, resistive load)

Limiting continuous current	0.46 A
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## Connection data

### Supply

Connection method	COMBICON plug-in screw terminal block
Stripping length	7.00 mm
Tightening torque	0.56 Nm ... 0.79 Nm

## Interfaces

Bit distortion, input	± 35 % (permitted)
Bit distortion, output	< 6.25 %
Bit delay	< 1 bit (DIP 7 = OFF, standard operation) < 11 bit (DIP 7 = ON, redundancy operation)
Signal	PROFIBUS

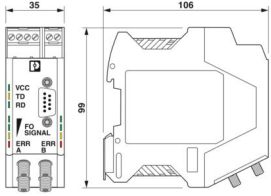
### Data: optical FO

No. of channels	2
Transmit capacity, minimum	-3 dBm (980/1000 µm) -15.4 dBm (200/230 µm)
Transmission length incl. 3 dB system reserve	70 m (F-P 980/1000 230 dB/km with quick mounting connector) 400 m (F-K 200/230 10 dB/km with quick mounting connector)
Transmission protocol	Protocol-transparent to the RS-485 interface
Connection method	F-SMA
Wavelength	660 nm
Minimum receiver sensitivity	-30 dBm
Maximum receiver sensitivity	-3 dBm (980/1000 µm)
Transmission medium	Polymer fiber PCF fiber

### Data: PROFIBUS acc. to IEC 61158, RS-485 2-wire, half duplex, automatic control

Serial transmission speed	≤ 12 Mbps
Connection method	D-SUB-9 female connector
Transmission length	≤ 1200 m (depending on the data rate, with shielded, twisted pair data cable)
Single conductor/terminal point, rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Single-wire/terminal point, flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Max. AWG conductor cross-section, flexible	14
Min. AWG conductor cross-section, flexible	24
Single-wire/terminal point, rigid AWG max.	14
Single-wire/terminal point, rigid AWG min.	24
Transmission medium	Copper
File format/coding	UART (11 Bit, NRZ)
Data direction switching	Automatic control
Output nominal voltage	5 V ±0.25 (50 mA)

## Dimensions

Dimensional drawing	
Width	35 mm
Height	99 mm
Depth	106 mm

## Material specifications

Color (Housing)	green (RAL 6021)
Material (Housing)	PA 6.6-FR

## Cable/line

### FO cable

Fiber types	980/1000 µm
	200/230 µm
	Polymer fiber
	PCF fiber

## Mechanical tests

Vibration resistance in accordance with EN 60068-2-6/IEC 60068-2-6	: 5g, 10...150 Hz, 2.5 h, in XYZ direction
Shock in accordance with EN 60068-2-27/IEC 60068-2-27	: 15g, 11 ms period, half-sine shock pulse
Free fall in accordance with IEC 60068-2-32	Free fall: 1 m

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-20 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Altitude	≤ 5000 m (For restrictions, see the manufacturer's declaration for altitude operation)
	≤ 2000 m (Hazardous locations)
Permissible humidity (operation)	30 % ... 95 % (non-condensing)

## Approvals

### CE

Certificate	CE-compliant
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### ATEX

Identification	⊕ II 3 G Ex nA nC IIC T4 Gc X
Note	Please follow the special installation instructions in the documentation!

#### ATEX, FO interface

Identification	⊕ II (2) G [Ex op is Gb] IIC ⊕ II (2) D [Ex op is Db] IIIC
Certificate	PTB 06 ATEX 2042 U
Note	Please follow the special installation instructions in the documentation!

#### UL, USA/Canada

Identification	Class I, Zone 2, AEx nc IIC T5 Class I, Zone 2, Ex nC nL IIC T5 X Class I, Div. 2, Groups A, B, C, D
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#### PROFIBUS interoperability

Note	Tested by independent PNO test laboratory (PN059-485-01)
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#### ABB certification

Identification	Industrial <sup>IT</sup> enabled
Note	This certification is a trademark of ABB.

#### Corrosive gas test

Identification	ISA-S71.04-1985 G3 Harsh Group A
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#### Shipbuilding

Identification	DNV GL
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#### Shipbuilding data

Temperature	B
Humidity	A
Vibration	A
EMC	B
Enclosure	Required protection according to the Rules shall be provided upon installation on board

#### EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Noise immunity	EN 61000-6-2:2005

#### Noise emission

Standards/regulations	EN 55011
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#### Electrostatic discharge

Standards/regulations	EN 61000-4-2
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#### Electrostatic discharge

Contact discharge	± 6 kV
Discharge in air	± 8 kV

Comments	Criterion B
Electromagnetic HF field	
Standards/regulations	EN 61000-4-3
Electromagnetic HF field	
Field intensity	10 V/m
Comments	Criterion A
Fast transients (burst)	
Standards/regulations	EN 61000-4-4
Fast transients (burst)	
Input	± 2 kV
Signal	± 2 kV
Comments	Criterion B
Surge current load (surge)	
Standards/regulations	EN 61000-4-5
Surge current load (surge)	
Input	± 0.5 kV
Signal	± 1 kV
Comments	Criterion B
Conducted interference	
Standards/regulations	EN 61000-4-6
Conducted interference	
Comments	Criterion A
Voltage	10 V
Emitted interference	
Standards/regulations	EN 55011
Comments	Class A, industrial applications
Criteria	
Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.

## Standards and regulations

Free from substances that could impair the application of coating	VDMA 24364:2018-05
Air clearances and creepage distances	
Standards/regulations	DIN EN 60664-1
	VDE 0110-1
	DIN EN 50178
	EN 60950

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## Mounting

Mounting type	DIN rail mounting
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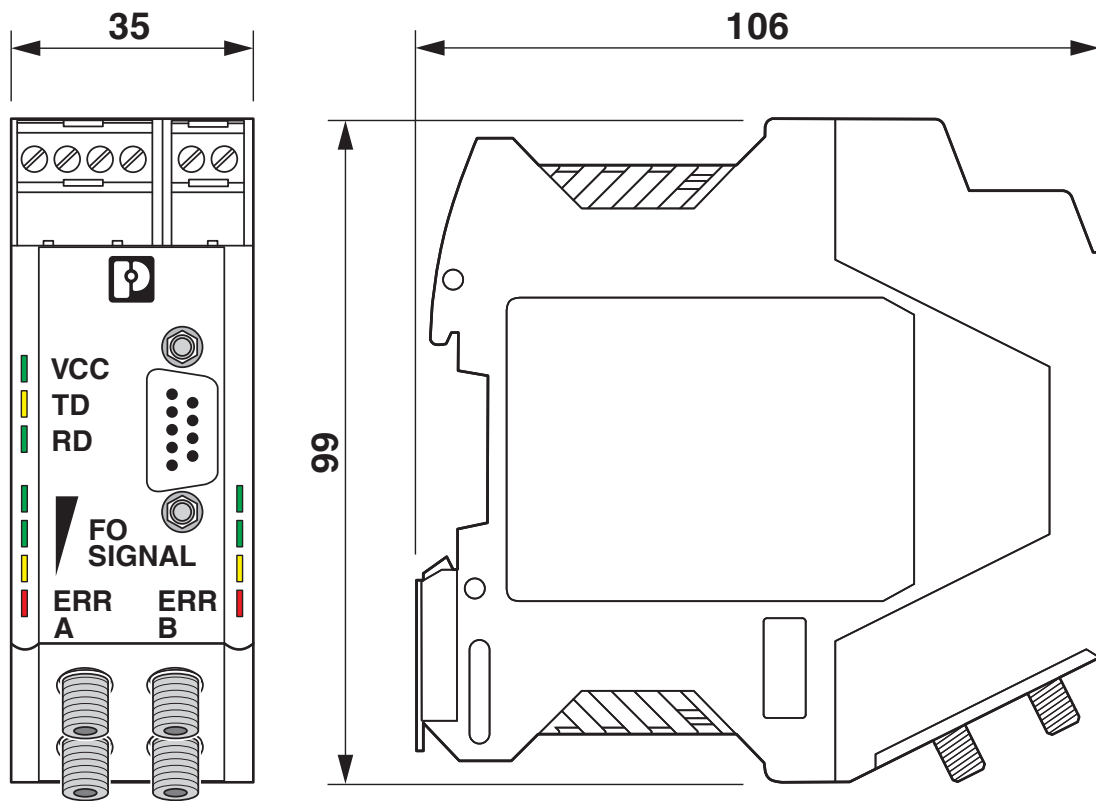


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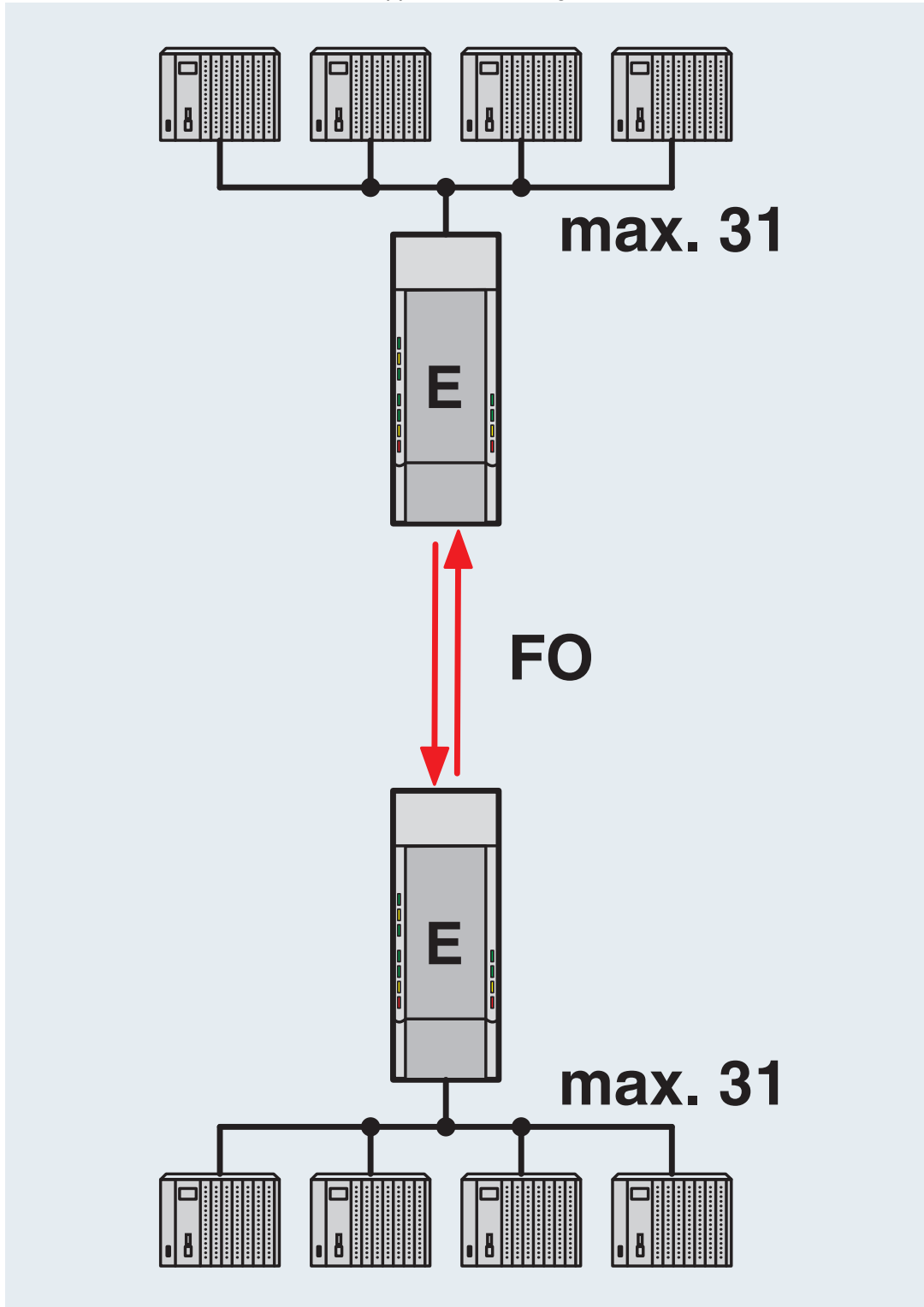
<https://www.phoenixcontact.com/us/products/2708287>

## Drawings

Dimensional drawing

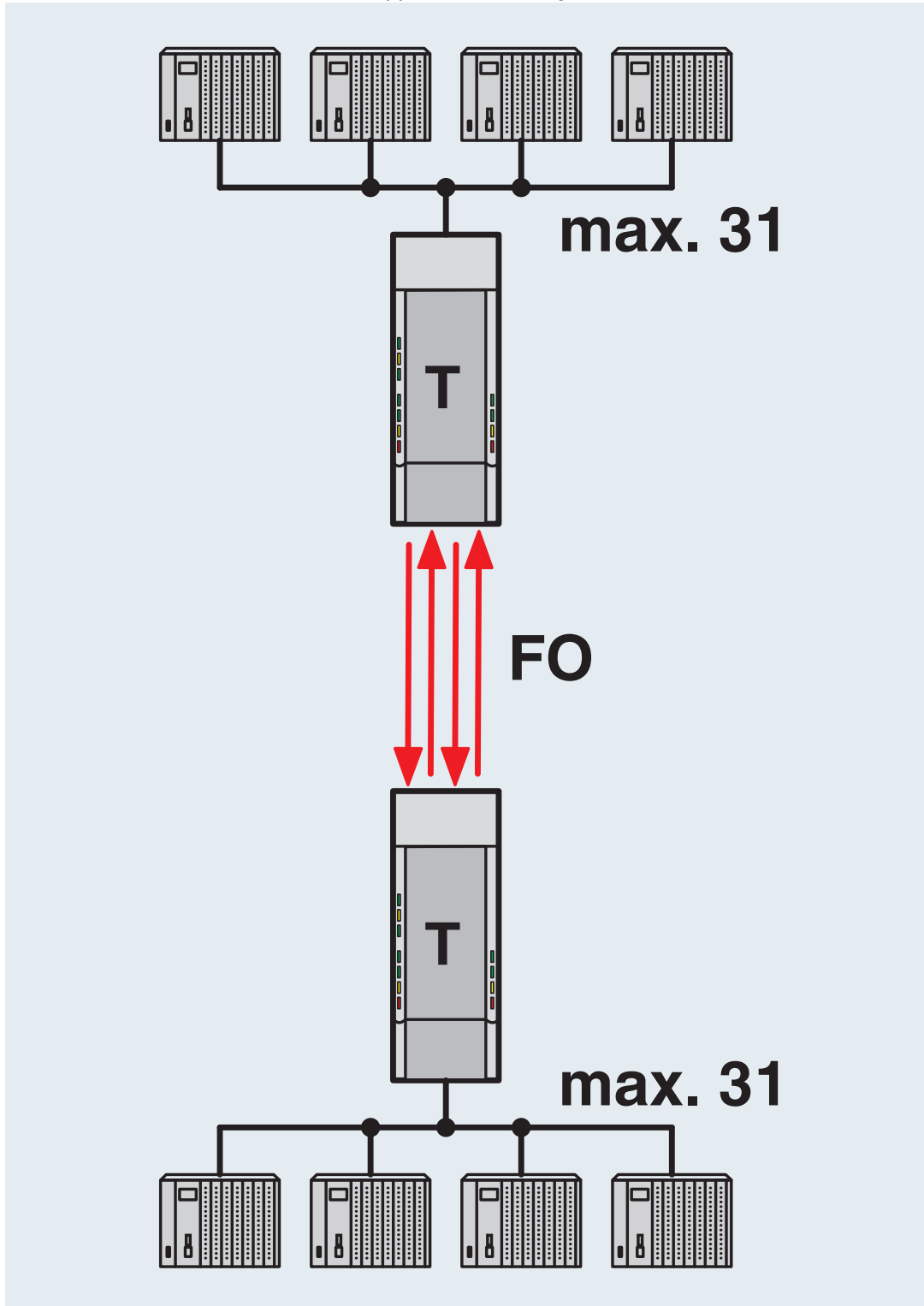


Application drawing



Point-to-point connection

Application drawing

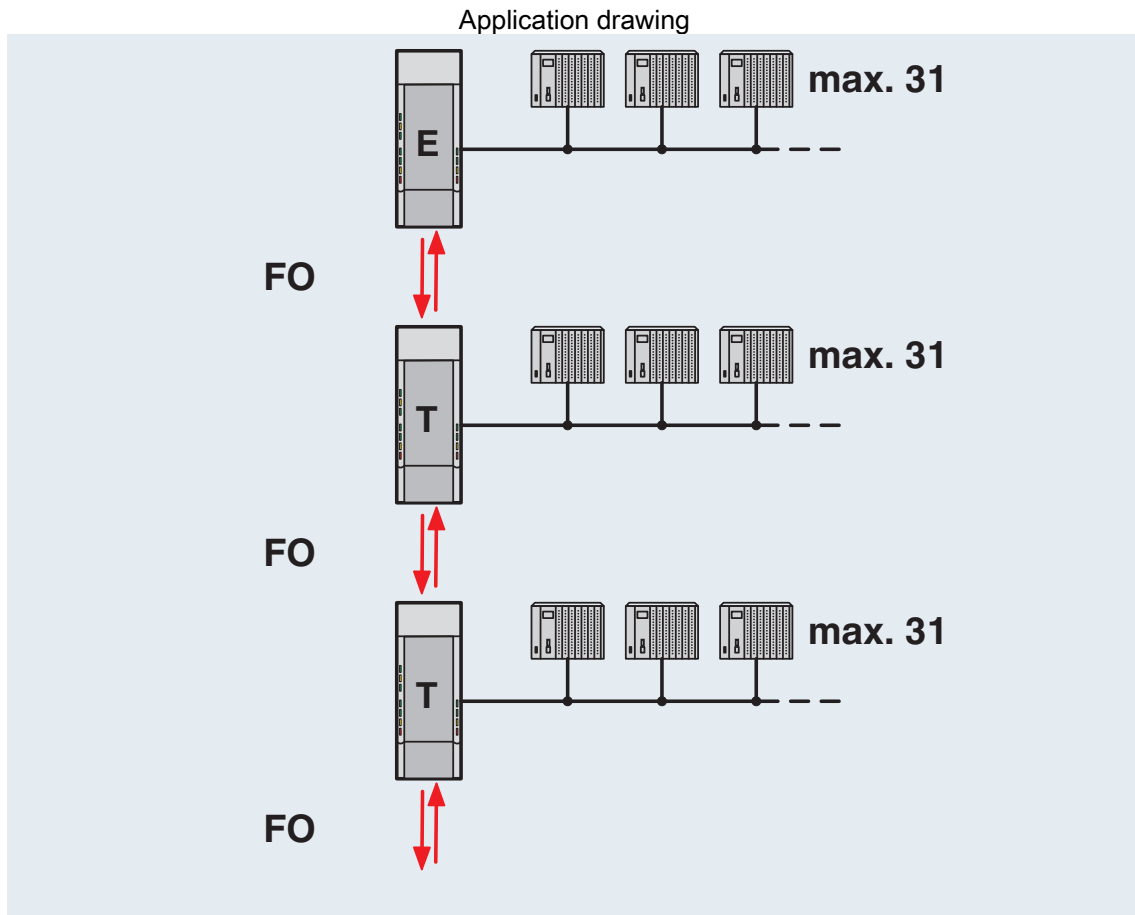


Redundant point-to-point connection

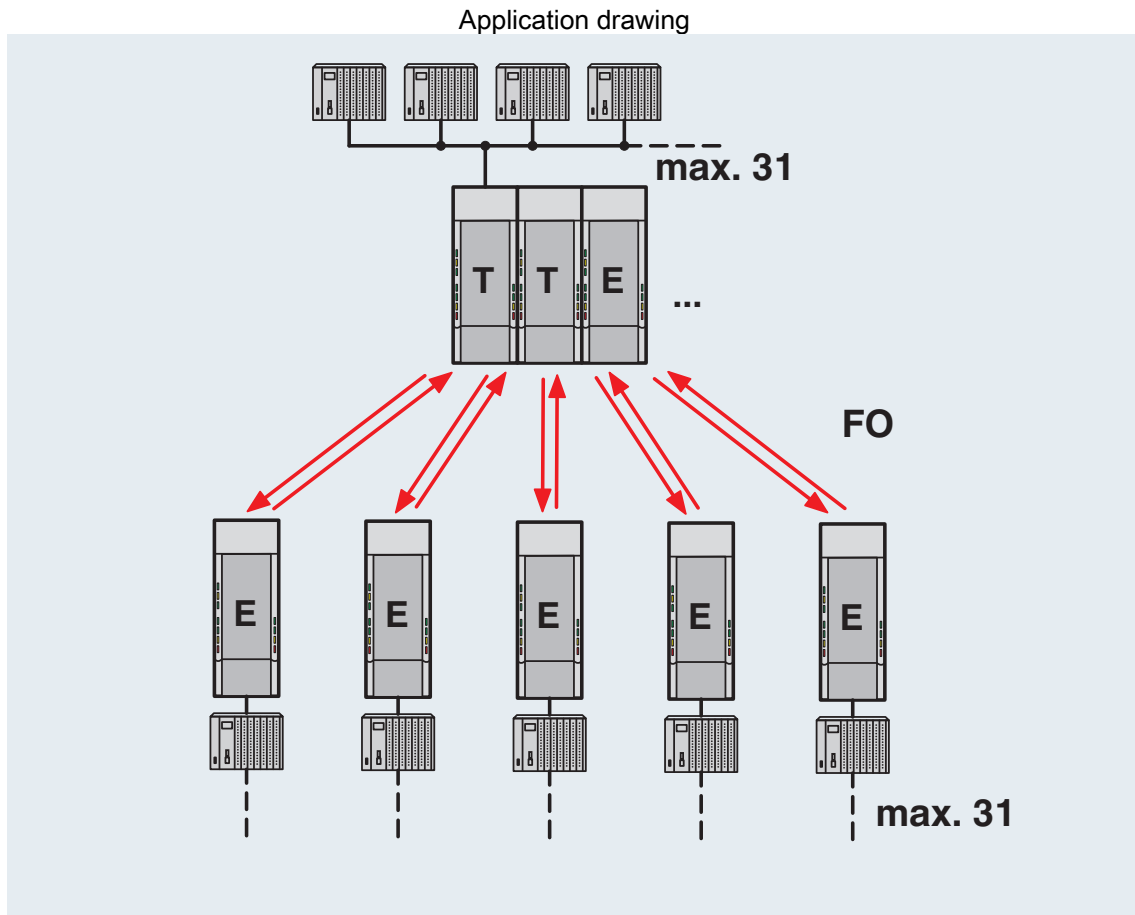
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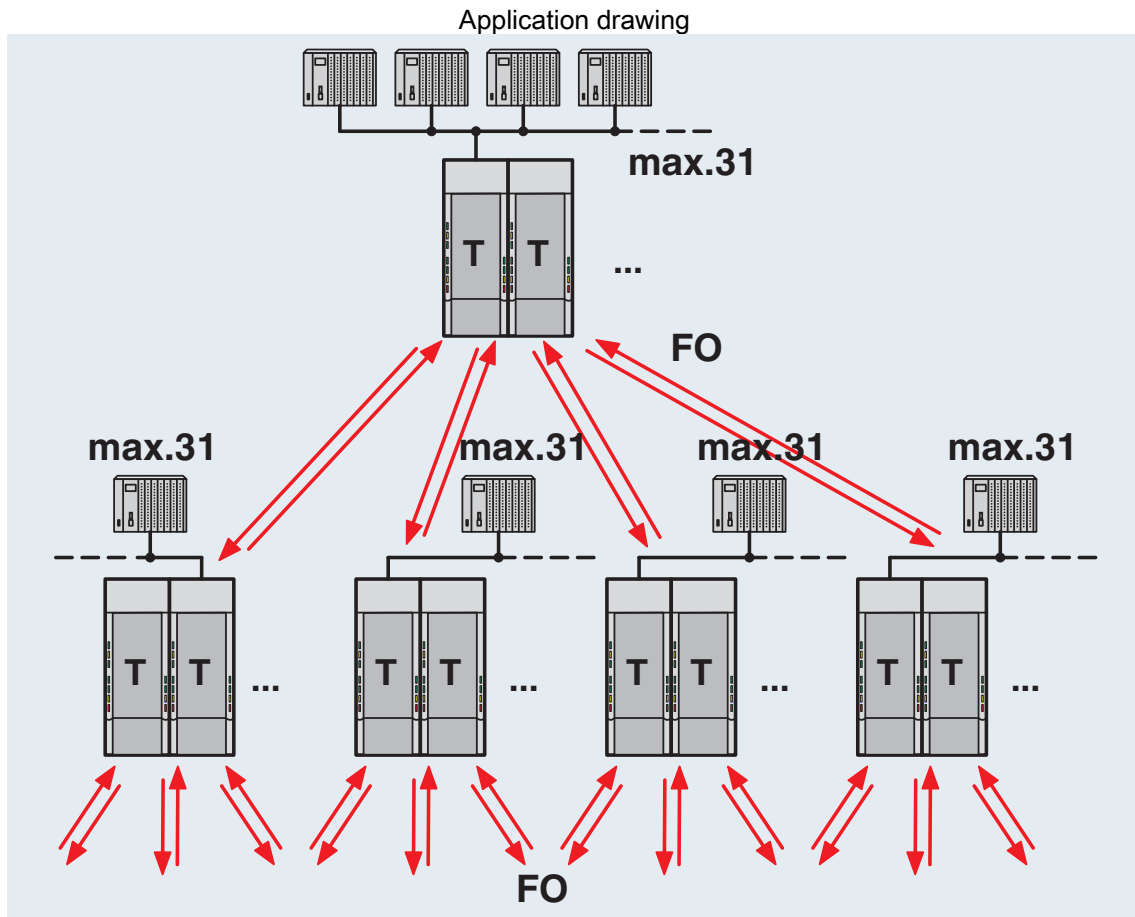
<https://www.phoenixcontact.com/us/products/2708287>



Line structure



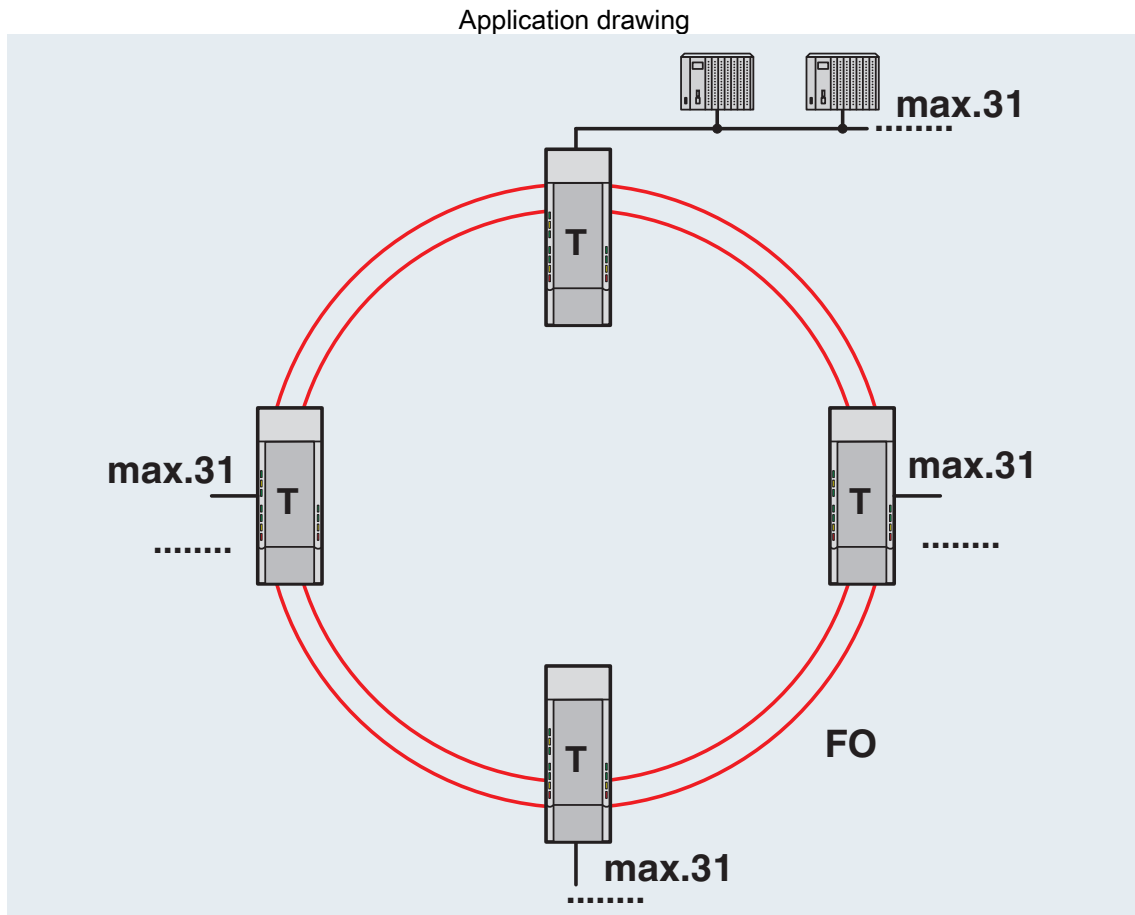
Star structure



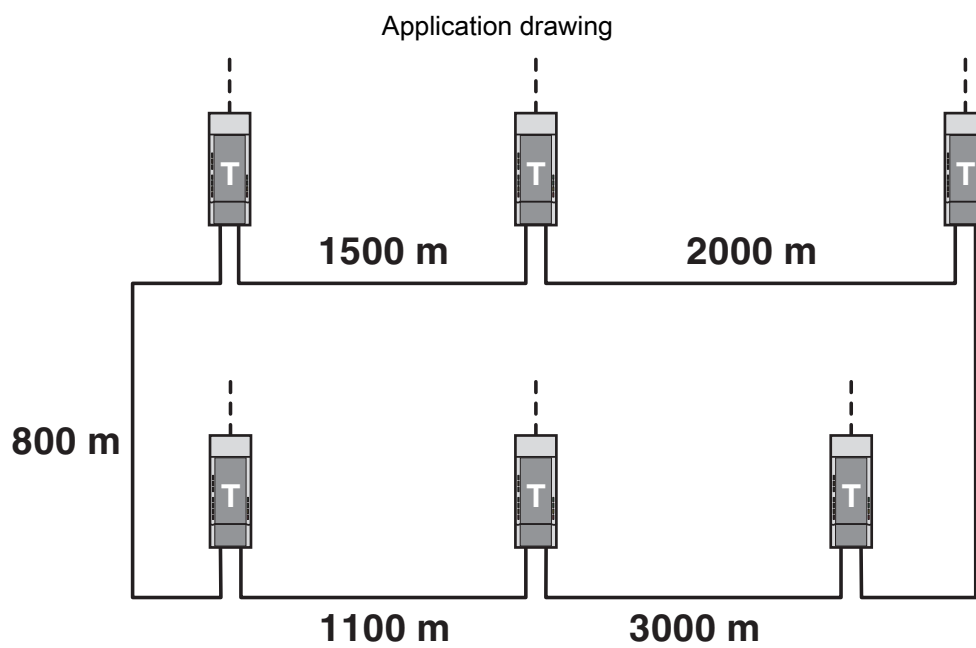
Tree structure

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Redundant FO ring



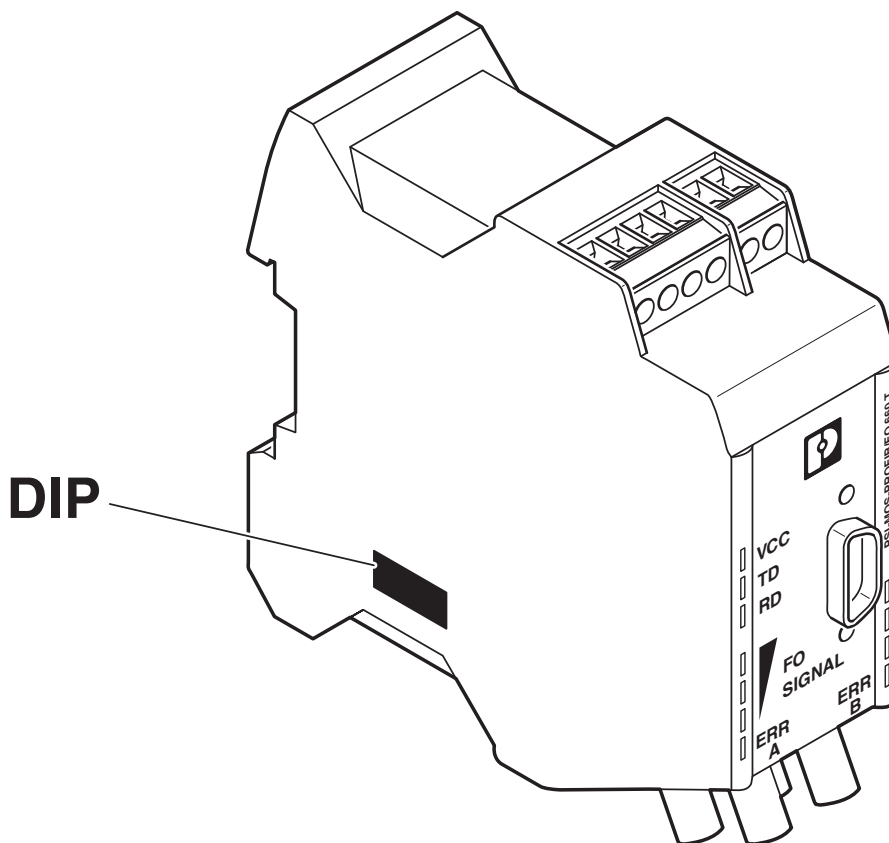
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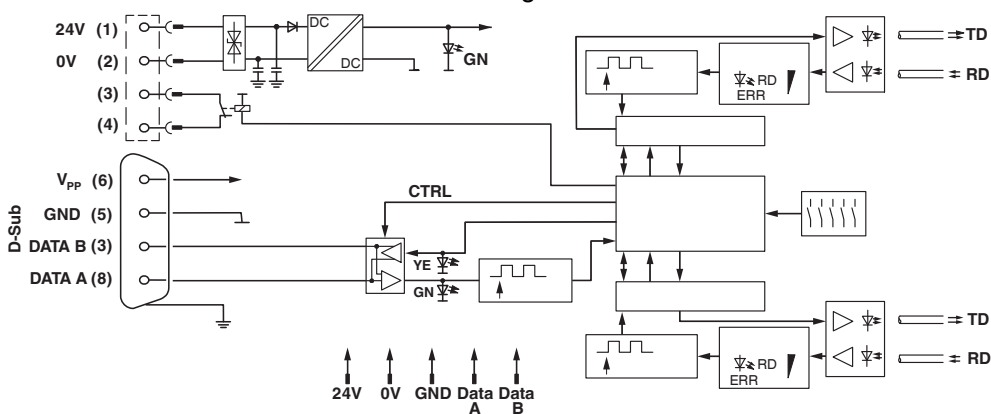
<https://www.phoenixcontact.com/us/products/2708287>

Schematic diagram



DIP switches

Block diagram



\*) only with PSI-MOS.../FO...T

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2708287>



**cULus Recognized**  
Approval ID: E238705



**DNV GL**  
Approval ID: TAA00001KR



**cULus Recognized**  
Approval ID: E238705



**DNV GL**  
Approval ID: TAA00001KR



**cUL Listed**  
Approval ID: E199827



**UL Listed**  
Approval ID: E199827



**IECEx**  
Approval ID: IECEx ULD 24.0008X



**UL Listed**  
Approval ID: E199827



**cUL Listed**  
Approval ID: E199827



**ATEX**  
Approval ID: UL 24 ATEX 3196X

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## Classifications

### ECLASS

ECLASS-13.0	19170411
ECLASS-15.0	19170411

### ETIM

ETIM 10.0	EC001467
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### UNSPSC

UNSPSC 21.0	43201500
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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	6(c), 7(a), 7(c)-I

### China RoHS

Environment friendly use period (EFUP)	EFUP-50
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.

### EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
SCIP	aa04adda-dd4f-476b-add5-c1f47175302b

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